LANL disassembles "pits," makes mixed-oxide fuel

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LOS ALAMOS, New Mexico, October 7, 2011—Los Alamos National Laboratory has successfully disassembled nuclear weapons "pits" and converted them into more than 240 kilograms of plutonium oxide, an initial step in permanent plutonium disposition. The certified oxide is an initial source of feed for National Nuclear Security Administration's Mixed Oxide (MOX) Fuel Fabrication Facility, currently under construction at the Savannah River Site in South Carolina. The disassembly, conversion, and certification is a significant accomplishment in an ongoing effort to safely dispose of surplus weapon-grade plutonium.

"The certification of this quantity of plutonium oxide demonstrates the safety and repeatability of the conversion process, and is a testament to the dedication of the LANL team that accomplished it," said Tim George, associate director for plutonium science and manufacturing.

"The successful conversion of plutonium metal into plutonium oxide resulted from a partnership between NNSA's Defense Nuclear Nonproliferation and Defense Programs offices and is an important accomplishment that demonstrates a safe and proven process for disassembling nuclear weapon cores that also provides material for the MOX Facility," said Deputy Administrator for Defense Nuclear Nonproliferation Anne Harrington. "This key component of the U.S. plutonium disposition strategy enables the U.S. to meet international nonproliferation commitments while advancing President Obama's goal of permanently reducing the number of nuclear weapons across the globe."

LANL is expected to convert at least 2 metric tons of plutonium to oxide by 2018 as part of a larger effort to provide up to 10 metric tons of early feedstock for MOX.

The Advanced Recovery and Integrated Extraction System (ARIES) at LANL is used to prepare, package and certify the plutonium oxide product. LANL successfully demonstrated that the ARIES process and procedures met the demanding Nuclear Regulatory Commission requirements for nuclear facility operations and record-keeping (NQA-1).

Following a rigorous product certification process, Shaw AREVA MOX Services, the prime contractor for the design, construction, and start-up of the MOX facility, has officially accepted the first 240 kilograms of plutonium oxide from LANL for the MOX facility.

Once at the MOX facility in South Carolina, the plutonium oxide from LANL will be blended with depleted uranium, fabricated into MOX fuel, and irradiated in domestic

nuclear powerreactors. After the MOX fuel is irradiated in civilian reactors, it is no longer suitable for use in nuclear weapons.
Through the Plutonium Management and Disposition Agreement (PMDA), the U.S. and Russia have agreed to each dispose of at least 34 metric tons of surplus weapon- grade plutonium, enough material for approximately 17,000 nuclear weapons. To implement plutonium disposition in the United States, NNSA is building the MOX Fuel Fabrication Facility to fabricate the plutonium feedstock into MOX fuel.